Code No: R2022051 **R20** **SET - 1**

II B. Tech II Semester Supplementary Examinations, December - 2022

PROBABILITY AND STATISTICS

(Common to CSE, CST, CSE(AIML), CSE(AI), CSE(DS), CSE(AIDS), CSE(CS), CSE(IOTCSIBCT), CSE(CSBS), CSE(IOT), AIDS, CS, & AIML)

Time: 3 hours **Max. Marks: 70**

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks

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UNIT--I

1 a) Calculate the mean of the following data [7M]

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No of students	12	18	27	20	17	6

b) Calculate the standard deviation of the following data [7M]

C.I	2.5-7.5	7.5-12.5	12.5-17.5	17.5-22.5
frequency	12	28	65	121

Or

2 a) Write a short note on primary and secondary data in statistic with examples. [7M]

b) A frequency distribution gave the following results (i) coefficient of variation is 5 (ii) Pearson coefficient of Skewness is 0.5 and S.D(σ) $= 2$ then find mean and mode of the distribution. [7M]

UNIT--II

3 a) Fit the curve $y = ab^x$ for the following data [7M]

x	1	2	3	4
y	4	11	35	100

b) Calculate the Rank correlation from the following data. [7M]

x	4	3	8	4	8	8	10
y	6	4	6	4	1	2	2

Or

4 a) Fit the curve $y = ax + b$ for the following data [7M]

x	1	2	3	4	5
y	4	3	6	7	11

b) The equations of two regression lines are $7x - 16y + 9 = 0, 5y - 4x - 3 = 0$, find the coefficient of correlation and the means of x and y. [7M]

UNIT--III

5 a) For the continuous random variable $f(x) = 6x(1-x), 0 \le x \le 1$ [7M]
(i) Check that f(x) is a p.d.f
(ii) Determine 'b' such that $P(x < b) = P(x > b)$

b) Six coins are tossed 100 times, using Binomial distribution; find the probability of getting four heads in 25 times. [7M]

Or

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6 a) A speaks truth 4 out of 5 times .A die is tossed .He report that there is a six. What is the chance that actually there were six? [7M]

b) Fit the Poisson distribution for the following data [7M]

x	0	1	2	3	4	5
f	147	147	74	25	6	1

UNIT--IV

7 Samples of size 2 are taken from the population Let S = {1,5,6,8} , without replacement find the following : [14M]

i. The mean of the population
ii. The standard deviation of the population
iii. Mean of the sampling distribution of means
iv The standard deviation of the sampling distribution of means

Or

8 a) A random sample of 40 taken from infinite population having mean 513 and S.D of 31.5 . What is the probability that $\bar{x}$ will be between 510 and 520. [7M]

b) A random sample of 100 is taken from a population with mean 21.6 and S.D 5.1. Construct 95% confidence interval for the population mean. [7M]

UNIT--V

9 a) A random sample of 160 workers exposed to certain amount radiation, 24 experienced ill effect .Test the claim that the proportion p =0.2 at 5% level of significance. [7M]

b) A die is thrown 100 times with the following results. Test whether the die is biased at 5% level. [7M]

No on the die	1	2	3	4	5	6
Frequency	10	12	24	16	20	18

Or

10 a) In a sample of 600 students 400 students' use ball pens in another sample of 900 students 450 are used ball pens. Test whether two samples are significantly differ with respect to use ball pens at 10% level. [7M]

b) Find the maximum difference that we can expect with probability 0.95 between the means of sample sizes 10 and 12 from normal population if their standard deviations are found to be 2 and 3 respectively. [7M]